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INTERNAL MIGRATION IN YUGOSLAVIA WORLD WAR II

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DISCUSSION PAPER NO. 32

I. INTRODUCTION

Yugoslavia is one country with two alphabets, three religions, four languages, five nationalities, six republics, seven surrounding nations, and countless interpretations about its middle of the road way of apparently successful economic development. In the period since WWII it has changed from a largely agricultural quite backward nation solidly embedded in the Soviet-Bloc, to a rapidly developing economy with a substantial industrial sector, and a relatively independent place in the front ranks of the Third World. Part of this process of change has involved a substantial movement of the population within the country: well over one-third of the 1961 population had moved to the place of residence at census time, and this figure of course underestimates the actual flow of people as it excludes migrants who returned to birthplace, migrants who died before 1961, and also this excludes the multiple movements of some migrants.[1]

In this paper I will look at this process in more detail, in order to determine whether there was anything uniquely Yugoslav about it, or whether internal migration took much the same form as it has in many another developing country of this or of an earlier age. Section II of the paper will review the theories of migration found in the tool-box of the economist and demographer, Section III will develop the oldest of these theories into a set of testable hypothesis which will then be tested on the Yugoslav data. Section IV will use regression analysis to analyze inter-regional migration and to test for the importance of ethnic barriers to migration.

II. REVIEW OF THEORIES OF MIGRATION

The following review of the theoretical literature of migration may appear to be somewhat of an artificial taxonomy which merely simplifies exposition. However, there are some fundamental differences in the five approaches discussed below, differences relating to the completeness of the approach, and to the fact that some of these approaches are less theories and more ex post views on what forms and characteristics are exhibited by migrations and migrants. The five approaches to be considered are: Ravenstein's Laws of Migration; the Selectivity Approach of Kuznets-Thomas; Gravity Models; the Investment Model of Sjaastad; and the Push-Pull Model.

Ravenstein: Laws of Migration

E. G. Ravenstein is quite justly credited with undertaking the first serious analysis of migration in his paper "The Laws of Migration", presented at a June 1885 meeting of the Royal Statistical Society. On the basis of British census data of 1881 he set forth a number of generalizations concerning the characteristics of migration which he called "Laws":

1) the majority of migrants proceed only a short distance and there thus occurs a displacement of the population to the great centers of commerce and industry.

2) migration is characterized by an absorption process whereby rapid-growth towns attract people from the surrounding area, the gaps left by these people then being filled by migrants from farther away

3) dispersion is the inverse of absorption

4) each main current of migration produces a counter-current

5) long distance migrants generally go to large centers

6) the rural population is more migratory than that of the towns

7) females are more migratory than males (in the 1889 paper this was modified to refer only to short distance migrations)

To the extent that there is a coherent theory in all this, it must be in the views relating to the short distance, and the wave-like motion of migration, the latter being logically deducible from the first two. And in fact one can speak of the theory of "migration waves" which is quite clearly the underlying factor in the work of Arthur Redford on English migration in the period 1800-1850 and the work of Bruce Herrick on migration in Chile [15, 8]. Particularly in the latter one can trace the movement from villages to towns to cities, each of these steps occurring over one generation, and "leap frogging" from villages to cities being quite minimal.

Gravity Models

The best description of gravity models is to be found in Walter Isard's book Methods of Regional Analysis [9]. As Isard puts it: "In the gravity, potential, and spatial interaction models....the region is conceived as a mass....and interregional relations may be thought of as interactions among masses". (p. 494). The mass, or gravitational potential of a region is usually formulated as a direct function of a gross attractive force such as population or gross regional product, and an inverse function of distance, thus a simple but representative formulation of a gravity model would look as follows:

$$I_{ij} = G \frac{P_i \cdot P_j}{D_{ij}^b}$$

where I_{ij} = an interaction between region i and j, such as rail tonnage, telephone calls, or migration

P_i = population at i

P_j = population at j

D_{ij} = distance between i and j

G = a constant

It is clear that the P's could be variables other than population and that the distance variable could be measured in many different ways. In fact, in talking about Ravenstein's Laws, Isard sets the gravity model into a much more complex framework, expressing the potential attractive force as a function not only of population and distance, but also of economic opportunities. The resulting empirical model is essentially of the same form as a push-pull hypothesis, however, the latter is based not on the macro approach of interactions among masses, but is rather formulated from micro considerations, i.e. individual decisions to migrate.

The Selectivity Approach of Kuznets-Thomas

In a well-known three volume work Population Redistribution and Economic Growth: United States 1870-1950 under the editorship of Dorothy Thomas and Simon Kuznets, one finds the statement of a migration model that connoisseurs of the art of model-building would undoubtedly find aesthetically pleasing, despite the lack of a precise mathematical statement of the model. With selectivity of migration as the pivotal element, the model presents a mutual cause-and-effect relation between economic growth and migration.

Differential economic growth causes some regions to be more attractive thereby inducing migration; but the process of decision-making in migration is such that it "selects" people by:

> "sex, age, race, family status, education, health, and many other social and demographic characteristics...And migrants...are probably preselected also, for their capacity to detach themselves from traditional surroundings. For these reasons the jobward migrating components of the population may be among the most productive from the standpoint of economic growth" p. 3,[10].

This almost Darwin like process of "economic selection" of migrants has of course a positive effect upon economic growth, thus completing the circle.

The process of the decision-making leading to migration is set in a costs-and-returns to migration framework, the costs being foregone factors at the origin, relocation, and readjustment costs; the returns being earnings and consumption opportunities[2] at the destination. From this it is a simple step to selectivity, as for example in the case of age: young working-age people are the most migratory because with a much longer working-life remaining they have greater returns to migration. Although Kuznets does not speak of this as an investment approach, it clearly bears a great deal of similarity to the theory espoused by Sjaastad (below).

In addition to the invaluable empirical work of delineating the currents of migration,exploring the facts of selectivity, relating the differences in regional growth and migration,this study must be credited with the presentation of a migration theory, which although not as clearly outlined as it may have been, does provide an appealing framework for consideration not only of the causes of migration, but-and this is unique to the selectivity approach - also the dynamic effects of migration.[3]

Sjaastad Investment Model

The Investment to Human Capital approach to diverse economic problems, often associated with Theodore Schultz, finds application also in the area of migration. The statement of this view of migration is to be found in a 1962 article by Larry Sjaastad [19]. Sjaastad indicates that the treatment of migration in a resource allocation framework is intended to enable a consideration of the effect side of migration - which he correctly points out has been largely neglected - that is "to determine the influence of migration as an equilibrating mechanism" (p. 80). However, the resulting theoretical framework appears to relate much more closely to the more usual cause of migration side of the issue than it does to the effects, and the latter problem is certainly much less fully investigated than it was in the Kuznets-Thomas study.

In order to determine the returns to investment in migration it is first necessary to measure all the costs on the one side and all the returns on the other. Both of these categories involve direct, money aspects and indirect non-money ones. If we set aside the private vs. social costs and returns issue, the following outline summarizes Sjaastad's approach:

I Private Costs

A. Money:
1) transportation costs
2) food and lodging during transition
3) costs of re-training for new job

B. Non-Money:
1) foregone earnings during period of transition
2) psychic costs of relocation

II. Private Returns

A. Money: 1) "real" differential in earnings; defined to include differences in cost of employment (commuting costs, union dues) and differences in cost of living.

B. Non-Money: 1) locational preferences
2) pure consumption element of actual change of location, analogous to the consumption element in education; this is not the same as greater consumption opportunities of the city which are accounted for in II.A.1) above.

Sjaastad argues that all the non-money factors on both sides except foregone earnings should not be included as part of the investment analysis since they do not involve real resource costs, because the analysis is meant to consider the effectiveness of migration investment with regard to resource allocation. However, Sjaastad does not make as clear as he should that when asking what causes migration one must include these costs in the analysis, for as he does indicate, these factors are "calculated" by the individual in his decision-making process.

The Push-Pull Theory of Migration

The Push-Pull hypothesis is not usually associated with any individual, and it is not clearly distinct from any of the other theories discussed above, but that is because it is in some sense the most complete synthesis of all of them. Very simply the hypothesis states that the micro-economic decision to migrate is made on the basis of a calculation of the relative attractive forces of the origin and destination, the main forces being earnings levels and potentials, availability of economic opportunities, availability of housing, education and recreational-cultural facilities, climate and social affinity. In a certain sense all of these factors can be said to have positive

sign in both origin and destination and there is in fact no force at origin that is absolutely negative i.e. repulsive - and thus it might be more appropriate to speak of a "push-pull" theory of migration. However, even aside from political emigration which clearly involves some element that is absolutely and not just relatively repulsive, it is not impossible to conceive of some economic situation in which one or more of the economic factors is in fact absolutely negative. Such clearly is the case when the marginal productivity of land is negative, or even if it is not, the net marginal product of an additional peasant family member may be negative if for example rent payments to the landlord are a fixed amount per member which is higher than the physical marginal product. Since such situations are not entirely inconceivable for many underdeveloped regions, it is perhaps useful to retain the "push", in the phrase, although it should be clear that many of the forces at the origin are also attractive forces in the absolute sense.

The simplest and most fundamental expression of this hypothesis is the neo-classical model adjusting a disequilibrium of wages among regions by the movement of the factor labor towards the region of higher wages. Thus if M_{ij} = migrants from i to j over a given time period, W_{ij} = wage relative between i and j, and f is some function of migration response to earnings differentials, then:

$$M_{ij} = f\ (W_{ij})$$

The gravity approach to migration suggests two very simple and reasonable modifications to the above, the inclusion of size and distance. In neo-classical terms these same considerations might be regarded as a

normalization of the variable migration (most often by the population of both the origin and destination), and an accounting for the friction of distance. However one justifies these factors the effect on the form of the equation is similar:

$$M_{ij} = f\ (W_{ij}, P_i, P_j, D_{ij})$$

where P_i and P_j are population at i and j respectively and D_{ij} is some measure of distance between i and j.

This model, with the addition of the rate of unemployment as a variable, is basically the same as that used in Ira S. Lowry, Migration and Metropolitan Growth [11], in a well-known recent work on U. S. migration. Lowry points out quite clearly the crucial assumption of this model, "That the interchange between each pair of places is independent of that between each other pair" [11, p. 18]. Now it may fairly be asked whether such an assumption is at all justified, for each potential migrant at i has a choice of several j's, the final choice being a function of all the W and D variables, that is, a general equilibrium model which belies the independence assumption. There may be a way out of this full interdependence through the use of a probability model, but for my purposes in Section IV of this paper, the problem is moot because the analysis is in cross-section rather than time-series, and is partial as a result of fixing origin or destination.

There are two important recent modifications to this model, one concerning the effect of job-vacancies, the other the role of linkages established by earlier migrations. The former brings into the picture the process of labor-turnover and the mechanism through which vacancies are

filled; attempts to include these factors have not as yet gone beyond the use of indirect measures such as unemployment rates [5, 11], or change in employment [16]. The role of linkages was first discussed by Nelson [12] who divided the effects into information flows, and the attractive force of friends and relatives. For analytical purposes, Nelson's concept of a "Friends and Relatives Multiplier" provides a testable hypothesis; the higher earlier flows M_{ij}, the greater will be current flows ceteris paribus. The difficulty in practice is to separate the influence of linkages measured as stock from earlier migrations and the effect of wages and distance which also affected earlier migration.[4]

In what follows I will attempt to present a picture of internal migration in Yugoslavia after WW II using as a framework and as tools some of the theoretical concepts outlined above, indicating thereby some of the ways in which the Yugoslav experience was unique. In part III,I will look at the phenomenon of rural-urban migration within the framework of Ravenstein's "waves of migration" concept. In Part IV, a simple push-pull equation of migration will be used to estimate the effects of different variables on internal migration flows. A linkage-type variable will be used, but one that is of unique relevance to Yugoslavia, the ethnic composition of a region's population. The purpose of this will be to test important hypothesis concerning the relations among the different nationality groups in Yugoslavia.

III. RURAL-URBAN FLOWS

A large movement of people towards cities is common to most developing nations, and so too are the problems this movement has occasioned. In Latin-America this flow has been funnelled rather narrowly within each country into one main city, resulting in an economic development illness which one economist has labelled "hypercephalism".[5] With the exception of Brazil and Colombia, the percentage of a country's population about 1960 living in the capital (or largest) city, ranged from 10.4% to 40.7% for Uruguay, with three others over 20%. This high concentration was to a large degree a result of migration flows, as is evidenced by the fact that the concentration was lower in 1950.[6] The magnitude of these flows, is indicated by the example of Chile. In Santiago, which in 1960 accounted for 25% of Chile's population, about 37% of a population were non-natives, i.e., in-migrants.[7]

The situation in Yugoslavia provides a striking contrast to the picture painted above. On the one hand, the extent of population concentration is much smaller: in 1961 the capital, Belgrade, made up 4% of the population, while the next largest city Zagreb, had about 3%.[8] On the other hand, the relative magnitude of the migration is much higher, the non-native population of Belgrade and Zagreb being respectively 71% and 64% of the total. For the 9 largest cities (pop. 100,000 +) this figure is 64%, two-thirds of these non-natives having migrated since 1946. (See Table V below).

This contrast suggests that in Yugoslavia the rural-urban flow, though perhaps more rapid and greater in magnitude relative to the urban

population, has been somewhat more balanced in the sense of being directed towards several destinations rather than a single large center. A Yugoslav economist writing on urbanization in Serbia in the period 1953-61, stated that "because of the ability to provide more easily housing and short travel distances for migrants, medium and small cities were able to attract more whole families, and therefore grew relatively more."[9] Jack Fisher [3] has shown that the gravitational orientation of economic activity and hence population flows in Yugoslavia follows traditional patterns, which means that there are several very important "nodes" of development. Yugoslav authors have also pointed to the fact that the basic characteristic of migration has been the movement of the population into economic centers from the surrounding regions.[10]

These facts do not by themselves tell the story of rural-urban flow. They do however tell us that in considering the application of Ravenstein's Wave Theory we cannot simply look at the evidence for the main city and at some facts about all other cities as was justifiably done by Herrick [8] for Chile. A more fruitful analytical approach is first to classify all settlements into several groups along the urbanization scale as follows:

V = villages
T = towns
S = small cities
L = large cities

Now call VT the migration from villages into towns in a given period, TS migration from towns to small cities and in general IJ = migration from I to J. Then we can formulate a Rural-Urban Migration Matrix showing the

total flows among the four urbanization-types:

	Destination			
Origin	VV	VT	VS	VL
	TV	TT	TS	TL
	SV	ST	SS	SL
	LV	LT	LS	LL

It would be a rather naive interpretation of Ravenstein to expect all in-migrants to large cities to come only from small cities and so on down the scale, or that the absolute number of empty spaces left in small cities by the flow SL be filled by migrants from towns (TS). Surely the realistic a priori deductions concern percentages. Thus we should define a matrix:

	Destination			
Origin	vv	vt	vs	vl
	tv	tt	ts	tl
	sv	st	ss	sl
	lv	lt	ls	ll

where an element $ij = \frac{(IJ)}{\sum_{J=1}^{4} IJ} \cdot 100\%$ = migrants from I to J as a percentage of all in-migrants to J.

In the above matrix, which I shall call the Ravenstein Matrix, the values in the columns add to 100% as they give the distribution of in-migrant origins for each class. A "strong" verification of the Wave Theory would be given by an ordering of column-values that descended for origins farther down the urbanization scale: e.g., for large cities, the percentage of in-migrants from small cities would be greater than the percentage from towns, which in turn would exceed that from villages. The lack of such an ordering need not necessarily disprove the Wave Theory,

because the different population size of the origin groups surely has some effect on the numbers flowing to large cities. The values can be normalized for this effect, as will be shown later, and the normalized values can then be used to test a "weak" case of the Wave Theory.

The above stated hypothesis testing the "strong" case of the Wave Theory consists of two statements:

a) $sl > tl > vl$
b) $ts > vs$

Can we deduce from Ravenstein's Laws any a priori statements concerning the other elements in the matrix? His 4th Law states that for each main current of migration there is a counter-current, which implies a reverse-wave, hence a descending order of percentage values for origins farther up the scale, e. g., for villages, the percentages of in-migrants from towns should exceed that from small cities which in turn exceeds that from large cities. Thus we can add to the above two statements:

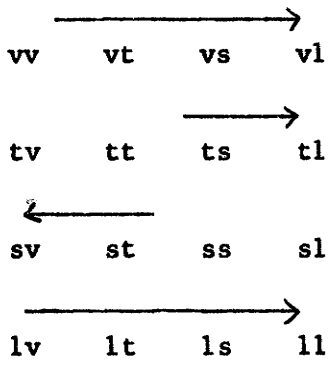
c) $tv > sv > lv$
d) $st > lt$

The relation of the main diagonal elements (vv, tt, ss, ll) to the other elements is not at all clear in the Wave Theory, and the reason for this is surely because flows among settlements of the same class do not contribute to the process of urbanizing and hence cannot be a test of a Wave pattern in the process. These values are nevertheless useful, for they provide a rough test of the stage of the urbanization process. At an early stage we might expect very low ll and very high vv values and the reverse at a late stage of nearly "complete"

urbanization. Why is this so? At an early stage, the first movement from the villages towards urbanized areas would not always be by the poorest - for it takes a minimum amount of wealth to migrate - but often from those working better lands.[11] Their places would then be filled by farmers from the poorer lands. In practice this wave may take the form of movement into urban areas from surrounding plains, followed by a movement from the hills and mountains into the vacated plainlands.[12] During the process of urbanization a large part of migration probably consists of people moving from agricultural to industrial occupations, whereas in the later stages most migration does not involve as much crossing of occupation lines, but is rather a movement from one industrial job to a better one, hence a movement between two urban areas.

Can we say anything about the relative values of the elements across the rows? Since the precentages are taken down the columns it might seem that this would be meaningless. However that is not the case. The four testable statements shown above (a, b, c, d) can be generalized as follows: for a given destination A, the % of in-migrants from each other origin varies inversely as the distance from A along the urbanization scale. A similar statement can be made about row-values: for a given origin B, the % it contributes to in-migrants of each destination varies inversely as the distance from B along the urbanization scale. The logic of this is easier to see if we consider the row V, and ask ourselves if, under the Wave Theory, it would be reasonable to expect the percentage of in-migrants to large cities from villages (vl) to be higher than the percentage of in-migrants to towns from villages (vt).

The answer is not likely, rather than definitely not, for such a relation could occur even if the Wave Theory held true. This statement concerning rows expresses more a tendency than a logical deduction from the Theory, and can best be depicted as a direction of ordering as follows:



The 1961 Census of Yugoslavia provides the data necessary for a Ravenstein Matrix, though not a 4 x 4 matrix as described, since the breakdown of in-migrants is given for three types of settlements: villages (V), mixed (T), and urban (U).[13] Data for a large-cities column (L), are easily compiled from the census, and a column for small cities is then obtained by substraction since: VU = US + VL, etc. The seperation of U into S and L cannot, however, be done for rows on the basis of census information, hence we have a matrix of three rows and four columns. The migration figures shown are stocks at March 31, 1961 rather than actual flows over a given time period, but the breakdown of this stock by period of in-migration shows that about two-thirds of it is made up of movement since WW II, thus it seems likely that the stock is highly correlated with post-war flows and can be used as a surrogate for this flow. Table I shows the resulting computations both in absolute terms and in percentages by type of origin, that is both IJ and

ij values.

Perhaps the first point to note about the figures of Table I is the very high absolute value of migration VV: over 2.5 million of a 1961 village population of 11 million had moved from other villages. Of all the (known) migrants leaving villages, over half went to another village. Of the total migrant-stock in 1961 (6.8 million ≒ the sum of all elements in the matrix), over one-third is found to be in village to village movements.

Yugoslav research on migration has often stressed that "village-city migration became (after the war) the predominant characteristic of population movement".[14] It should be clear from Table I that in absolute terms at least, the dominant stream of migration was not village-city (VS + VL = 1.8 million), but rather village-village![15]

As indicated earlier, a high VV (and vv) suggests an early stage of urbanization, something clearly implied in the Yugoslav case. However, the expected concomitant low values for inter-urban migration are not found but rather we find that urban-urban migration (US + UL = 1.0 million) is the third highest stream! Is this then a case of early urbanization or not? The answer is a qualified yes: by 1961 only 28% of the population lived in urban areas, but the process of urbanization has been a very rapid one and Yugoslavia had by this time already begun to move into the stage of economic development in which inter-urban population flows become more important.

The figures of Table I are inconclusive with respect to the hypothesis of the Wave Theory, partly because only three rows are available. It is possible to expand the matrix into four rows making an assumption that has a relatively neutral effect on the outcome of the test, namely that for any given destination, the relative percentages of in-migrants from the two types of urban areas (S, L) are proportional to the percentages of the total population in each of these two types: $\frac{S}{J} - \frac{\text{pop. } S}{\text{pop. } J}$. The ratio is about 2:1 and using this one obtains a hypothetical matrix as shown in Table II.

In Table II, the vertical arrows indicate the expected direction of column values for the "strong" case of the Wave Theory, and it is rather clear that the values do not conform to such a pattern. Though this does not disprove the theory, it does show that the "strong" case of absolute inflows being in descending order for origins at a greater "urbanization distance" from the given destination, does not hold.

On the other hand, the evidence of the values along rows does provide support for the theory, as the order conforms fairly well to the expected ordering indicated by the horizontal arrows. This is not inconsistent with the evidence discussed in the previous paragraph, as the latter refers to the "strong" case of the theory, whereas the row evidence clearly does not.

A much more satisfactory test is one which normalizes for the effects of varying population base in origins, that is one which accounts for the possibility of migration into cities from villages being higher than from towns because the population base of villages is very much larger.

This can be done very simply by defining an index:

$$k_{ij} = \frac{ij}{\%\text{ of total pop. in } i} \qquad ij = \%\text{ of in-migrants to } j \text{ from } i.$$

The percentage distribution of the population ought to be that at the beginning of the period if it is short, and some average if it is long, but it definitely ought not be the value for the end of the period, which is unfortunately the value that is available. Instead of this I have used a population distribution estimated as follows: hypothetical population of - say - villages = 1961 population of villages + in-migrants (sum of column V in Table I) - out-migrants (sum of row V in Table I). If the 1961 distribution is used instead, the ordering of values along rows and down columns is not affected, however the relative size of the indices is disturbed; for example k_{vv} and k_{lu} would be about equal, whereas the latter is much larger in Table III.

Applying this procedure[16] to the elements of a Ravenstein Matrix, one obtains a Normalized Ravenstein Matrix as shown in Table III. This can then be used to test the "weak" case of the Wave Theory: for a given destination the value of the normalized migration index varies inversely as the "urbanization distance" from the destination, and similarly for a given origin. That is, we would expect the same ordering of values along columns and rows as for the "strong" case looking at percentages. Note that if there is no systematic relation between the percentage distribution of in-migrants by origin and degree of urbanization of the origin, that is in-migrants are selected randomly from settlements of different types, than the Normalized Ravenstein Matrix would have all values = 1.0.

In Table III, the arrows again indicate the expected direction of ordering of values. The evidence in the columns, though not overwhelmingly favourable to the Wave Theory, certainly does show such a tendency of ordering as expected, the index values for village destinations decreasing down the columns, and increasing for city destinations. Since only three values are available, there cannot be an a priori expectation for the mixed settlements (T). The values in the table also point out quite clearly the dichotomous aspect of both a high rural-rural flow and a very high inter-urban flow, that is the implication that Yugoslavia was experiencing the characteristics of an early and a later stage of urbanization at the same time. As shown in footnote 15 above, it is of no use to apply the assumption used earlier to split row U into two, however, some independent evidence does exist which implies something about the split of k_{ul} into k_{sl} and k_{ll}.

The city of Belgrade data on official registration of in-migrants for the years 1964-67, shows that 13-14% of the in-migrants came from the provinces (Srez) in which are included the cities comprising our L groups.[17] Since this undoubtedly includes a good deal of rural-urban flow (especially in such cases as Novi Sad, Split, which have large, traditionally out-migratory hinterlands) it seems safe to say that the in-migrants from the L cities did not make up more than 10% of the total. Given the fact that Belgrade is the capital of Yugoslavia, we should expect this percentage to be higher than for other large cities (perhaps with the exception of Sarajevo as discussed below). The percentage of the population in L was about 10% in 1961, thus the value for k_{ll} would be at the most about 1.0; since k_{ul} is a weighted

average of k_{sl} and k_{ll}, with weights corresponding to the relative population, that is about 2:1, this evidence points to a value $k_{sl} = 2.5$. On the basis of the latter it would seem that the high inter-urban flow is not so much a movement among large cities, as a movement from small to large and among small cities. (The components of k_{us} are probably such that $k_{ss} > 1.45 > k_{ls}$. Thus the movement is still in the Wave stages of the urbanization process.

III. SOME OBSERVATIONS ON RURAL-URBAN FLOWS AND ECONOMIC DEVELOPMENT

The relevance of rural-urban flows to economic development is expressed in the shift from agricultural to non-agricultural occupations. The magnitude of this shift is indicated in Table VI fro the period 1953-61, which reflects a rapid industrialization process. In this period the absolute numbers engaged in agriculture fell by more than 600,000, while the non-agricultural labor force increased by nearly one million. The same shift is seen even more dramatically in the figures of Table VII showing the population dependent on agricultural and non-agricultural pursuits. What is of interest here is how much of the 2.7 million increase in the non-agricultural population is explained by the shift of population.

The stock of migrants at 1961 in urban areas is broken down by period of settlement so that the numbers for 1953-61 are available for the elements VU, TU, and UU. It is probably safe to assume that all of VU and TU involved shifting from agriculture to non-agriculture, any over-estimate being compensation for the possibility that some of UU also involved such a shift. This sum yields a value of nearly two million (VS + VL + TS + TL in

Table I) of which one million in the period 1953-61.[18] Undoubtedly some of the movement into the mixed settlements also involved a shift, and I will assume that this is roughly given by VT. It was not possible to obtain the period breakdown for this, hence I assumed that same percentage of total stock for 1953-61 as for urban areas (50%) which gives a value of nearly 0.3 million. Thus in the given period, of the 2.7 million shift into non-agricultural occupations, 1.3 million is explained by migration.

The residual from the above calculations implies that the increase in non-agricultural population resulting from natural growth was 1.4 million, which would mean an annual rate of natural increase of about 2.5%. This is clearly inconsistent with the facts: the rate of natural increase for the entire population in the 1950's fell from about 1.7 to 1.3%[19] and surely the non-agricultural segment of the population experienced a rate lower than the average. The source of the inconsistency is not difficult to find: it consists of people who have shifted into non-agricultural occupations but have stayed on the land. This group of "seljaci-radnici", or landed-proletariat as I shall call them, has been the subject of a large literature in Serbo-Croatian[20] which has explored both the causes and the effects of this phenomenon.

The number of landed-proletariat is quite substantial, estimates for 1961 ranging from 800,000 to 1.3 million.[21] This phenomenon of "daily migration" (dnevne migracije) as the Yugoslavs call it, has been analyzed as to causes and effects by many writers, but the large literature on the issue has failed to ask the important question, whether the not-so-obvious costs are worth the obvious savings. What are these costs and savings? It

is rather clear that this reduces the influx of population into the cities and relieves the tremendous pressure on urban capital, particularly housing. It is less clear but undoubtedly correct that there are increased costs, some of them direct such as the provision of commuter transportation (done both by cityand enterprises), others indirect, such as increased fatigue, wasted time (here the opportunity foregone is often part-time education), decreased participation in worker's management, etc.[22] At this point - and I think only at this point - the fact that the country being analyzed in a Socialist country becomes relevant, in that the magnitude of the landed proletariat is surely swelled by the conventional Socialist policy of under-emphasizing the consumer sector, which includes housing construction. However, the jury is still out on the efficacy of such a policy in Yugoslavia, for it may very well be that providing such an option for the incoming industrial workforce (by providing adequate transportation) yielded greater benefits than costs.[23]

The substantial movement of people from rural to urban areas has called forth an equally substantial literature on the problems arising from this, which can be seperated into two groups: problems at the origin and problems at the destination. The former is of the "how 'you gonna keep 'em in the selo (village) when they've seen the lights of Skadarlija" genre, and expresses a concern for the facts of rural depopulation and discontinuity resulting from the out-migration of the potential young heirs to the family hectares. Given the policy of encouraging the considerably more productive large-scale and modern agricultural enterprises, this appears to manifest less a real problem than it does the potential success of the waiting-out strategy of socialization in agriculture, as these heirless lands are acquired

by the socialist sector.[24]

The other problem, providing the Social Overhead Capital in the cities for the expanding urban population is quite real despite the safety valve of "landed proletariat". Table VIII shows that with the exception of Maribor the annual inflow into large cities in 1958-61 ranged from three to four percent of the population. For the period 1964-68 the figure for Belgrade - calculated from data described in footnote 16 - had risen to about 3.5%, and it probably would be safe to assume that a similar increase occurred in the 1960's for most of the other cities, particularly for the "boom-towns" of Rijeka and Split.

In the capital city of Belgrade this influx has been of the order of magnitude of about 30,000 annually with out-migration of about 10,000 (see f.n. 16). With a natural rate of increase of about 1% annually[25] this means that the increase in population each year is over 25,000. Given that the number of new apartments constructed in a good year is 10,000, and that officially there are 50,000 families in line for them, it seems clear that the housing problem is going to be around for some time to come. The concern expressed by the authorities about the large inflow of people gave rise to the rumor of instituting a "visa" requirement for in-migrants to Belgrade, a rumor that was only partially denied by Branko Pesic, the mayor of Belgrade in a newspaper interview in which he stated that Belgrade would remain an open city - for qualified workers.[26]

IV. REGRESSION ANALYSIS OF INTER-REGIONAL MIGRATION

In this section of the paper I wish to present the results of a regression analysis of Yugoslav inter-regional migration using a simple one equation push-pull model of the type described in Section II.

As discussed above (p. 9) the microeconomic basis of the decision to migrate involves a consideration of attractive forces in all possible destinations, hence a satisfactory model explaining all migration flows over time would have to be a general equilibrium model. However, I will be concerned with explaining out-migration from a given origin to all possible destinations in a given time period, hence a partial model will suffice. The logic of this is exactly analogous to the difference between explanation of demand for a product over time, and explanation of the cross-section demand for all available substitutes in a given time period. For example demand for a Ford 500 over time is a function of the price and other characteristics such as horsepower, prestige quotient, etc. not only of the Ford 500 but of all competitors. On the other hand, a cross section analysis in a given period of the demand for different automobile models - a market-share analysis essentially - would stipulate that demand for model i is a function of the characteristics i. In the same way, out-migration from a fixed origin i to destination j is a function of the attractiveness characteristics of j.

The model used for explanation of out-migration from a fixed origin i, is as follows:

$$m_{ij} = C.D_{ij}^{a}.EA_{ij}^{b}.UR_{j}^{c}.YP_{j}^{d}.LF_{j}^{e}$$

where m_{ij} = 1961 migrant stock at j originating in i divided by population j($= M_{ij}/P_j$)

C = a constant

D_{ij} = road distance from i to j

EA_{ij} = ethnic affinity between i and j

UR_j = percent of urban population in j, 1961

YP_j = per capita national income in j, 1961

LF_j = labor force participation rate in j, 1961

The migration data available are not flows over a period, but rather the stock of migrants at March 31, 1961, and consequently are not entirely satisfactory. There is however, a presumption indicated earlier that a very substantial amount of migrant stock is a result of recent flows, hence there is reason to suppose that stocks and recent flows are highly correlated. Normalization of absolute migration by the population of the destination is equivalent to specifying P_j as an independent variable explaining M_{ij} with a coefficient = 1 which in terms of the gravity model argument means that migration to j from i is, <u>ceteris paribus</u>, proportional to the population mass at j. The data for the dependent variable though based on the 1961 Census, are not shown in the published Census books, but are taken from Table 10 of the study by Dr. Dusan Breznik referred to in footnote 18 above. This source gives M_{ij} values for twenty so-called Demographic Regions of Yugoslaiv as shown in the map at the end of the text, thus it is possible to estimate regression coefficients for the above out-migration model for each of the twenty regions, each regression being done with nineteen observations.

In order to estimate road distances between regions it was first necessary to choose a point in each of the region-space. The effective frictional distance for a representative resident of region i considering out-migration to region j is clearly not represented by the distance between approximate geographic centers of the respective regions. The relevant measure of distance should ideally take into account the spatial distribution of the population in both the origin and destination regions, for if, for example, the population of origin i is highly concentrated near the boundary of i closest to j, the effective distance is less than the distance between the geographic centers. A better center to measure from would then be the "center of population gravity".

On the basis of a population density map of the Demographic Regions[27] I chose such a center of gravity for each region by eye-approximation, and then using a road-distance computer (available for six dinars anywhere in Yugoslavia) I calculated a value in Kilometers for each D_{ij}. It should be obvious that the expected sign of the coefficient for D_{ij} is negative.

The variable EA_{ij} - ethnic affinity - is much more complex than D_{ij} both in its theoretical role in the model and in the procedures for measurement, but the effort in dealing with the greater complexity is very rewarding for what it may tell us is of much greater interest. The purpose of the variable is to test the hypothesis that ethnic differences constitute a barrier to migration, a hypothesis that is stated in many places, implicity or explicity as for example:

> "Even though the North is economically more attractive than the South, ethnic, linguistic and other cultural differences restrict many southern workers from seeking jobs in the advanced North", [3. p. 53]
>
> "Because of (ethnic) differences migrations among regions of different language are of a lesser intensity". [Breznik, p. 18].

Many Yugoslav writers disagree and do not regard this as being at all significant in explaining migration.[28]

The effect in question is clearly of the "linkages" family effects that Nelson first discussed in 1959 [12]. Nelson's "Friends and Relatives Multiplier" hypothesizes that migration from i to j is greater the larger is the stock in j of former migrants from i because of the increased information flow and because of the greater social attractiveness of a milieu where one is not a complete stranger but already has friends or relatives. My Ethnic Affinity Multiplier acts in a way similar to the latter: that is, of all possible destinations for a potential migrant from i, the most attractive - ceteris paribus - is that in which the cultural, linguistic, religious and habitudenal characteristics of the populace are most akin to his own, which is clearly related to the degree of ethnic similarity of i and j. The problem is how to measure this.

First it is necessary to define the ethnicity of each of the twenty regions. Except for the five regions of Bosnia this does not pose any problem as there exists a very great ethnic homogeneity. I chose to use a simple criterion: the ethnic association of a region was said to be that of the predominant ethnic group in the region as given in the 1961 Census. Of the regions outside Bosnia, only in Western Vojvodian does one find the predominant group to be as low as 50% of the population, the figure in all other regions ranging from nearly 70% to 98%. In Central Bosnia, the predominant group Muslims - accounted for about 31% of the population while the next largest group, Serbs - was 28%. For the other regions in Bosnia, the predominant group

was a majority, but just. Because only one region had a plurality rather than a majority, I felt it not necessary to complicate the ethnic association measure by devising some more complex weighting scheme, and left it simply as determined by the predominance of an ethnic group.

The procedure resulted in classifying each region i as to its ethnicity. The next step was to devise some measure for each region of the affinity of its ethnic group to the ethnic group of all other regions j. One could attempt to answer such questions as: for a Serb, how closely akin are Croats, Slovenes, Muslims, Macedonians, and Siptars, in other words one might attempt to measure the ethnic distance among the different nationalities. Such a measure has in fact been attempted by the Institute of Social Studies in Belgrade.[29] The procedure was to apply a Bogardus-scale of social-distance (used by Bogardus in the U. S. in the 1930's to measure the social distance among different ethnic groups) on the basis of survey data giving answers to such questions as: For each of the nationalities other than your own, would you consent to such a person living in your republic, working with you, befriending you, marrying your son/daughter/yourself, etc. The results of this testing seem to me to be open to different interpretations, and are also rather subjective, hence I did not attempt to implement any such measures in my analysis.

I defined ethnic affinity between an origin i and a destination j, as the percentage in j's population of the ethnic group which was predominant in i. For example, Central Serbia is predominantly Serbian, hence for the purposes of explaining out-migration from Central Serbia to Central Croatia, the Ethnic Affinity variable is measured by the percentage

of Serbs in the population of Central Croatia. The hypothesis being tested then is: for a given origin, the higher the percentage of that origin's ethnic group in a destination, the greater will be the migration to that destination. If one takes the view that ethnic differences have been a barrier to migration, then this variable will be expected to have a significant positive value in the regression. This is not the place to discuss the great importance of the nationalities issue in the Yugoslav political and economic scene[30] hence I take it for granted that any analysis which sheds light on the issue of ethnic differences is of great interest to Illyriologists and proceed with the statistical testing.

The urbanization variable UR_j simply measures the percent of the population of j in urban areas in 1961. This is clearly a positive attractive force, which undoubtedly reflects not only the greater attraction of city lights, but also captures the economic attractiveness of more developed regions offering greater job opportunities in new industry. It would be possible to separate these effects if one could obtain some measure of job opportunities such as unemployment rates or better still job openings, however this was not possible for the regional divisions I worked with. Once again the expected sign of the coefficient is positive.

Per capita national income in 1961 is a proxy for average wages in the migration model and needs little additional explanation. In a short-run model or one that looked at time-series migration, average wages in industry would be preferable. But even with such a model, wages might not be as good a measure of economic attractiveness in Yugoslavia because of

the relatively high public consumption element in the economy, and furthermore the correlation between average wages and per capita income is likely to be higher in a socialist economy with a small non-wage income component. Needless to say the expected sign of the coefficient is positive.

The variable LF_j = labor force participation rate in 1961 was included not so much because there was an a priori rational for it, but because it showed itself to be a significant variable in the case of a few regions, regions which have in common the fact that they contain the poorest agricultural areas of the country. This variable - along with a few others not shown because they yielded poor results - was tried at first as data was readily available from a migration study done by Dr. Dusan Breznik.[31] One might expect that LF_j would be a reflection of industrialization, in the sense of a higher participation rate in industrial areas because more women work and families are smaller. If so then LF and YP would be highly correlated and there would not be much help in the analysis from the inclusion of LF. I must admit that I am not entirely happy about the theoretical basis of the relevance of LF but it was clear that for a few regions LF was an important variable not only in the sense of significant t-values but also in the sense of its contribution to the overall fit of the equation and significance of fit of the other variables. Because of this I have shown the results of regressions with LF included for those regions in which it was important, but have not done this for the other regions.

Table IX presents the results of the regression analysis. The explanatory power of the variables is on the whole quite high as judged by the values of $\bar{R}^2$ and the F-test of the significance of the overall fit, which is highly significant with the exception of the equation for Hercegovina, which is however significant at a 5% level. High $\bar{R}^2$ does not of itself mean a good estimation, thus it is gratifying to note that the fit of the individual variables is also quite good in the sense of being fairly consistent with respect to sign, value and significance. That this is so should become clear in the discussion of the individual variable results which follow.

The variable D has a negative coefficient in all cases, as expected, and is furthermore very significant as shown by the high t-values, summarized in Table X. It is important to note that the two cases where the coefficient for distance is not significant are two very similar regions, the Northern and Southern parts of the Adriatic coast including the hinterland. This part of the country had until recently very poor transportation connections to the rest of Yugoslavia, hence out-migration to even the nearer attractive regions meant a great deal of travel, so that the incremental distances beyond this were not much of an additional hindrance. Furthermore, the most likely connection with practically all inland regions was in this earlier period along the coast to Rijeka, and from there through Central Croatia to other inland regions, while the road distance measures I used were for the newer much improved routes across the central mountain ranges, which are today in fact used considerably more than before. Since these routes are much

shorter connections to the inland regions, they in fact underestimated the effective frictional distance for out-migrants of the period before 1961. With this in mind it appears correct to conclude that the role of distance in explaining migration is as important in Yugoslavia as it has been shown to be in many another migration study.

The next variable, EA = ethnic affinity, sets the Yugoslav case quite apart from others, for in it we find a unique and important aspect of the migration-decision, the role of ethnic kinship as an attractive force. Consistent positive values and a high degree of significance for the coefficient in a majority of cases, suggest very strongly that the hypothesis stated on p. 30 should be accepted. Thus it appears to be indeed true that ethnic differences act as some sort of a "barrier" to migration, for the statistical evidence indicates that out-migrants do not simply react to the relative economic attractiveness of possible destinations, but take into consideration the ethnic composition of the population in the destinations.

If this is relevant there is no reason to suppose that it should be equally important for all ethnic groups or regions, nor even that it should in fact <u>be</u> important for all groups. Hence it is instructive to look in more detail at the value and significance of the coefficient for the different regions. First of all it should not be surprising to anyone who is familiar with the nationalities in Yugoslavia that the coefficient for the Kosmet is not of the right sign and is quite insignificant. The population here was two-thirds Šiptar in 1961, and the Šiptars (Albanians) are undoubtedly farthest removed from all other nationalities in terms of

language and culture, and are quite indifferent in choosing among the other groups. A similar conclusion is reached in the aforementioned study of ethnic distance.[32] Much of this migration is of unskilled labour to large cities - particularly Belgrade - as suggested by the very high and significant value of the coefficient for UR (% urban pop.) in fact the highest value for this coefficient of all twenty regions. The great attractiveness of large cities is in the fact that the opportunities for peripheral (often temporary) employment in labour-intense jobs particularly in the tertrary sector - construction, snow-removal, domestic odd-jobs, marginal intra-city cartage on bicycle or man-powered carts - are much greater than in less urbanized areas.

The explanation for the unimportance of the EA variable in Western Vojvodina is of a somewhat similar nature: though fifty percent of the population is Serbian, there is a very large group of Hungarians in this area, comprising about one-third of the region's population. They too are ethnically quite far removed from the Slav groups in Yugoslavia, and though the region was classified in this study as being Serbian, it included a large group who are relatively indifferent in their attitudes towards other ethnic groups[33] and to the extent that ethnic affinity enters into the migration-decision, this group would be little affected by the fact that Belgrade has many more Serbs than does Zagreb.

For the two Bosnian regions which have "not-significant" t-values the reason is probably in the fact that both have a relatively heterogeneous population ethnically. North-East Bosnia, which lies across the Sava from

the attractive fertile lands of Eastern Croatia (Slavonia) and Western Vojvodina (Srem and Backa) has a population about one-half Serb and about one-fifth each of Croats and Muslims. Hercegovina, a barren land for the most part, is about one-half Croat and one-third Serb. Thus, even if the individual groups were taking into account the ethnic affinity factor in their decision to migrate, the lack of homogeneity is sufficiently great that the simple test of the hypothesis used here may not have been able to detect this factor.

The very low value and non-significance of the EA coefficient in the case of Old Serbia and Eastern Serbia are not so easy to rationalize within the framework of the hypothesis. They are both extremely homogeneous, with the predominant Serbs accounting for 90 and 98% of the population respectively. One might infer from this that the ethnic affinity variable does not play a role as hypothesized in the case of regions that are predominantly Serbian, and even though there still remains the puzzle as to why this coefficient is insignificant in only two of the four regions of Serbia Proper (that is the Republic of Serbia less the two autonomous regions), such an implication appears to be supported by the data on the coefficient values when arranged by the grouping of regions comprising Republics, shown in Table XI.

The data in Table XI are arranged in order of the average value for the EA coefficient, and although this is not intended to be proof of the relative importance of this factor in migration among the different republics (ethnic groups where there is great homogeneity, that is all except Bosnia and perhaps Vojvodina), there are some important facts to

note in the data. First of all, the ordering by averages is an excellent reflection of the values covered by the ranges, a slight disturbance of this relation being found in the case of Bosnia. Secondly, there appears to be a close clustering of the values when the regions are grouped into their respective republics, which suggests homogeneity in the effect among regions of the same ethnic association. The latter in particular is a very significant point, as it brings into sharp focus the systematic consistency of the results, and it is consistency and conformance to a systematic relation rather than high $\bar{R}^2$ values alone that mark an econometric exercise as satisfactory.

Coefficients for the variables UR = % of urban population, are all of the expected positive sign, and a majority of them are significant, although taken overall the significance of this variable does not appear to be as great as for the preceding two. With the exception of Western Slovenia, the non-significant cases appear to be regions in which much of the out-migration was not of the rural-urban type, but of the rural-rural, migration from worse to better agricultural lands, a migration-stream that was still of considerable importance in Yugoslavia as I have shown in Section III.

This was certainly true for the mountainous, barren regions of Southern Dalmatia, North-West Bosnia, Hercegovina, and Montenegro, from which out-migrants went to the fertile lands of the Danubian Plain, that is to Eastern and Western Vojvodina and Eastern Croatia. There was even a substantial current from Montenegro to the Kosmet, clearly a case of moving down the mountain to somewhat better land in the depressions of the

Kosmet (polja or kotline).[34] Although North-East Bosnia is not quite the barren, mountainous area that the others are, it is a very densely populated region, whose residents jumped at the opportunity to cross the Sava to the much more fertile lands in Slavonija and the Srem. The relativity of land fertility is again the only reasonable explanation for the large migration from Eastern Vojvodina to Western Vojvodina, particularly large from the eastern-most parts of this region. The empty places left in Eastern Vojvodina were filled by migrants from the other regions mentioned, particularly North-West Bosnia.

The case of Western Slovenia has nothing to do with rural-rural migration. Rather the non-significance of UR must be attributed to the fact that a very high proportion (50%) of the total went to Eastern Slovenia (most likely to urban areas therein) which had a much lower urban population in 1961 than did certain other regions, and clearly the preponderant weight of this very high flow to a low UR region overwhelmed the computation of the coefficient.

It is useful to note how well the results of the estimation of a coefficient for UR conform to the conclusions reached in Section III. If rural-urban flow were important in Yugoslavia we would expect this variable to fit quite well. It appears that it does fit well in a majority of the cases, but is clearly not important in other cases, cases in which detailed information reveals migration was of the rural-rural type. In Section III I have indicated that although rural-urban flows were substantial, there was clearly still a good deal of the early-stage-of-urbanization movement from the worst agricultural lands to better ones.

Perhaps the less said about the variable YP the better. Its complete lack of consistency and significance in all but three or perhaps four cases, is frankly quite surprising. One might have expected that a relatively close correlation between urbanization and per capita income (.60) would distort the estimation procedure to some extent, but certainly not so badly, and even if this did happen, why did UR consistently yield good results? Finally, if this is merely an econometric problem, why does UR appear significant in the few cases where YP is significant? Clearly there is more to the lack of good fit for YP than this, but unfortunately I have been unable to think of any sound reasons for this, and short of engaging in sophistry, I fail to see a better alternative than to admit defeat in this particular case.

The victory over LF (= labour force participation rate) is not a stunning one, but neither is it the "throw-up-your-hands" situation of YP. This variable turned out to be important in six cases, four of these having a negative sign and the other two a positive one. The four negative cases are North-West Bosnia, North-East Bosnia, Eastern Bosnia, and Montenegro.

It is not a coincidence that these regions also were exceptional in having UR not-significant, and this common aspect is corroborated by the fact that in one other of the cases with non-significant UR, Eastern Vojvodina, LF, though not very significant also had a negative sign. This suggests that the importance of LF has something to do with the distinction between rural-urban and rural-rural moves. The explanation is apparently that the migration from these regions was highest to regions of relatively more productive agriculture, which were regions with participation rates

that are lower than for industrialized regions. Although participation rates are even lower in the poor agricultural regions (which these cases were themselves) the rate of out-migration to these regions of a similar type were extremely low, hence the negative statistical relationship was not greatly affected by these observations.

The two positive cases, Eastern Croatia and Macedonia, are though both agricultural areas, quite dissimilar, and there does not seem to be any good reason to expect the coefficient of LF to be negative in some cases and positive in others. I suspect that the statistical importance of LF in these two cases may be a reflection of some variable correlated with LF that is not included in the model.

V. CONCLUSION

A final cataloguing of conclusions from any research is subject to a trade-off between the benefits of a concise statement of results, and the danger of overstatement of tendencies that must be qualified. This danger is however minimized by an awareness on the part of the readers that statements of conclusion are to be regarded as simplifications. With this caveat I proceed to summarize in brief the main finding of my paper.

Internal migration in Yugoslavia has been characterized by something very much like the wave-process of movement towards urban areas suggested in the writing of Ravenstein. The urbanization process has moreover reached the stage where movements among urban regions become quite significant, comprising somewhat over one-seventh of the known movements.

At the same time, movement among rural areas remains very important, accounting for about a third of known movements. This latter type of flow is not incompatible with the Wave Hypothesis, for, as shown in Section IV of the paper, much of this seems to have been a matter of inhabitants from poor lands moving into the empty spaces left in more fertile lands by out-migrants to more urbanized settlements; this movement is in fact the tail-end of the migration wave.

The Ravenstein Hypothesis does not hold in the "strong" sense of, for example absolute flows into cities being highest from towns, as there clearly was a very large amount of "leap-frogging" from villages directly into cities. However the "weak" case of the hypothesis, that the relative inflows to a given type of settlement, are smallest from settlements more removed in terms of degree of urbanization, does hold up quite well.

Economic development generally entails a shift of population from agricultural to industrial and other non-agricultural occupations, and such a shift manifests itself most often in geographic migration from rural to urban areas. (I abstract from the problem of rural areas becoming urban, which is less justifiable the longer the time-period involved.) In the Yugoslav case, this shift in the period 1953-62 in occupational structure of the labour force over the period 1953-61, was only partially achieved by migration from rural to urban areas. A very large proportion of this shift (about 30%) appears to have come about in the form of a large group of industrial workers commuting from rural areas to their place of work in a nearby city. The development of this "landed-proletariat" has been a result

of such factors as inadequate housing, but one should not draw from this an immediate negative implication, because the effect of this phenomenon has been to relieve the pressure on urban plant, which of course means a release of resources for investment in industrial development. Whether the net effect of this safety-valve was positive can be determined only by a detailed analysis of both the benefits and the costs incurred, costs such as additional transportation, lost time, reduced productivity as a result of fatigue and frustration, etc.

There are three main conclusions to be derived from the regression analysis of interregional migration in Yugoslavia, concerning the conventional explanatory variables of migration, the importance and the character of rural-urban flows and finally the role of ethnic differences as a barrier to migration.

As in other migration studies, the frictional effect of distance manifests itself quite strongly in the Yugoslav case. Unlike other studies however, this one was not able to detect any important effect in the case of the income variable. If taken at face-value this evidence would imply that higher income is not of itself a greater attractive force in the migration decision in Yugoslavia. However I hesitate to take this at face-value as it is such an unexpected result.

The significance of the degree of urbanization as an explanatory variable in most regions, and the importance of labour force participation in the others, emphasizes the rural-urban character of the migration on the one hand, and on the other hand it also points out clearly the

continuing importance of migration from worse to better agricultural areas.

Perhaps the most interesting conclusions of the regressions are to be found in the implications of the role of ethnic factors in explaining the pattern of migration. Not only does this seem to be quite important, but furthermore the analysis suggests a systematic variation in the degree of the importance of this factor according to the ethnic group in question. If the analysis is correct, it would appear that ethnic affinity as a factor in migration is least important for the largest group, the Serbs, much more important for the next largest group, the Croats, and most important for the smallest groups, the Slovenians, Macedonians and Montenegrins. The why and wherefores of this issue I leave to Illyriologists of a different breed, that is to the political scientists, sociologists and others.

TABLE I

RAVENSTEIN MIGRATION MATRIX

YUGOSLAVIA 1961

: '000
: %

Destination

Origin	V	T	S	L
V	(2,591)	(584)	(1,121)	(558)
	88	68	57	49
T	(94)	(81)	(175)	(122)
	3	9	9	11
U	(195)	(168)	(570)	(453)
	7	20	29	39
Total*	(2,939)	(859)	(1,958)	(1,186)

SOURCE: V, T, U: Data from 1961 Census as summarized in D. Breznik, Demografski i Ekonomski Aspekti Prostorne Pokretljivosti Stanovnistva, Beograd: 1968, Ch. 10; S + L = U: data for L calculations from 1961 Census as given in Table III.

* Total for each column includes a fourth row not shown: Foreign and Unknown Origin.

TABLE II

RAVENSTEIN MATRIX MODIFIED

YUGOSLAVIA 1961

%

Destination

Origin	V	T	S	L
V	88	68	57	49
T	3	9	9	11
S	4.6	14	19.5	26
L	2.3	7	9.5	13

SOURCE: V, T, as in Table I; S, L, see text for explanation

TABLE III

NORMALIZED RAVENSTEIN MIGRATION MATRIX

YUGOSLAVIA 1961

Destination

Origin	V	T	S	L
V	1.24	0.96	0.80	0.69
T	0.33	1.0	1.0	1.12
U	0.35	1.0	1.45	2.0

SOURCE: See text for explanation

TABLE IV

ORIGIN OF 1961 IN-MIGRANTS TO LARGE CITIES

	1961 Population 000	% In-Migrants	Origin by Type: % V	T	U
Belgrade	585	71	49	7	44
Ljubljana	134	58	52	17	31
Maribor	83	61	57	17	26
Novi Sad	103	68	56	6	38
Rijeka	101	65	44	17	39
Sarajevo	143	56	29	19	52
Skopje	166	60	53	7	40
Split	100	54	55	11	34
Zagreb	431	64	50	13	37
ALL	1,845	64	49	11	40

SOURCE: Computed from 1961 Census of Population of Yugoslavia. Book XII Characteristics of Migration, Belgrade 1966, Table 1.3, p. 19, and Table 2.1, p. 76 for Novi Sad.

TABLE V

1961 IN-MIGRANTS TO LARGE CITIES BY PERIOD OF MIGRATION

City	1946-52		1953-57		1958-61		1946-61
	Simple Annual Average	% of Total In-Migrants	Simple Annual Average	% of Total In-Migrants	Simple Annual Average	% of Total In-Migrants	% of Total In-Migrants
Belgrade	14,400	25	15,600	20	17,100	16	61
Ljubljana	2,500	24	2,600	18	3,800	22	64
Maribo	1,800	26	1,700	18	2,100	19	63
Novi Sad	2,500	25	2,900	22	4,200	25	72
Rijeka	3,300	36	3,300	26	3,800	24	86
Sarajevo	2,500	23	3,400	21	4,500	23	67
Skopje	3,700	29	5,500	31	5,500	24	84
Split	1,900	25	2,000	19	3,500	28	72
Zagreb	7,800	20	9,100	17	12,300	19	56
ALL	40,400	25	46,100	21	56,800	20	66

SOURCE: Same as Table III

TABLE VI

LABOR FORCE DISTRIBUTION BY OCCUPATION

YUGOSLAVIA: AT CENSUS DATES

	1953		1961	
	'000	%	'000	%
Agriculture (including fishing & forestry)	5,361	68	4,731	57
Industry (including mining)	1,310	17	1,733	22
Services	1,177	15	1,676	22
TOTAL	7,848	100	8,340	100

SOURCE: Yugoslavia, 1945-64: A Statistical Survey, Belgrade: Federal Statistical Bureau, 1965. pp. 52-53.

TABLE VII

POPULATION DISTRIBUTION BY OCCUPATIONAL DEPENDENCE

YUGOSLAVIA: AT CENSUS DATES

Millions

	1953	1961	Change 1953-61
Agricultural	10.3	9.3	- 1.0
Non-Agricultural	6.6	9.3	+ 2.7
TOTAL	16.9	18.6	+ 1.7

SOURCE: As in Table VI

TABLE VIII

ANNUAL AVERAGE IN-MIGRATION AS PERCENT OF POPULATION: LARGE YUGOSLAV CITIES 1958-61

Belgrade	2.9	Sarajevo	3.1
Ljubljana	2.8	Skopje	3.5
Maribor	2.5	Split	3.5
Novi Sad	4.1	Zagreb	2.9
Rijeka	3.3		

SOURCE: In-Migrants: 1958-61 Average; Population in 1961 as given in Table IV

TABLE IX

OUT-MIGRATION REGRESSION RESULTS BY REGION

(Log-Linear Form)

Coefficient and (t) Values for Variables

	REGION	D	EA	UR	YP	LF	$\bar{R}^2$ (F)
1	Central Serbia	-0.96 (-5.10)	0.18 (2.27)	0.53 (2.25)	0.63 (2.57)	- -	.8565 (20.9)
2	Old Serbia	-2.44 (-9.15)	0.08 (0.99)	0.58 (1.83)	0.70 (1.84)	- -	.9082 (34.6)
3	Eastern Serbia	-1.65 (-6.78)	0.02 (0.16)	0.83 (2.69)	0.26 (0.86)	- -	.8729 (31.9)
4	Southern Serbia	-2.40 (-8.51)	0.15 (1.67)	1.40 (3.84)	0.51 (1.18)	- -	.9207 (40.6)
5	Kosmet	-1.84 (-6.02)	-0.03 (-0.32)	1.45 (3.39)	-0.35 (-0.74)	- -	.8953 (29.9)
6	Eastern Vojvodina	-1.05 (-2.29)	0.27 (1.62)	0.53 (1.09)	0.67 (1.36)	- -	.6894 (7.7)
7	Western Vojvodina	-1.16 (-2.89)	0.15 (1.10)	1.35 (3.43)	-0.05 (-0.13)	- -	.7520 (10.6)
8	Eastern Croatia	-0.95 (-3.22)	0.33 (5.19)	1.03 (3.48)	0.05 (0.14)	1.65 (1.70)	.9140 (27.6)
9	Central Croatia	-0.85 (-1.69)	0.19 (1.94)	0.97 (1.69)	0.73 (1.11)	- -	.7801 (12.4)
10	Northern Dalmatia	-0.49 (-0.66)	0.26 (2.04)	1.68 (2.23)	0.47 (0.49)	- -	.7526 (10.6)
11	Southern Dalmatia	-0.03 (0.04)	0.47 (3.53)	0.92 (1.59)	0.40 (0.85)	- -	.8092 (14.8)
12	Western Slovenia	-0.54 (-1.87)	0.34 (2.81)	0.21 (0.65)	0.82 (1.57)	- -	.9282 (45.2)
13	Eastern Slovenia	-0.51 (-3.58)	0.48 (6.54)	0.32 (1.95)	0.77 (2.70)	- -	.9868 (260.9)

TABLE IX (Cont'd)

	REGION	D	EA	UR	YP	LF	$\bar{R}^2$ (F)
14	North-West Bosnia	-1.56 (-3.12)	0.50 (3.08)	1.00 (1.69)	0.93 (1.07)	-3.83 (-2.20)	.7636 (8.4)
15	North-East Bosnia	-2.27 (-4.85)	0.22 (1.23)	0.46 (0.86)	0.83 (1.04)	-3.90 (-2.16)	.8280 (12.5)
16	Central Bosnia	-2.10 (-7.43)	0.14 (2.25)	0.82 (2.76)	0.57 (2.11)	- -	.9004 (31.7)
17	Eastern Bosnia	-1.93 (-3.22)	0.40 (1.95)	0.35 (0.44)	1.23 (1.42)	-4.73 (-2.02)	.7637 (8.4)
18	Hercegovina	-1.66 (-2.04)	0.24 (1.43)	1.38 (1.79)	-1.20 (-1.69)	- -	.5993 (5.2)
19	Macedonia	-0.93 (-5.20)	0.51 (6.08)	0.82 (3.31)	-0.35 (-1.30)	1.61 (3.31)	.9568 (57.5)
20	Montenegro	-1.21 (-3.06)	0.41 (3.14)	0.41 (1.23)	0.45 (1.08)	-1.83 (-1.98)	.8059 (15.9)

TABLE X

DEGREE OF SIGNIFICANCE OF COEFFICIENTS

(As determined by t-values)

Level of Significance	Cumulative Number of Variables Significant		
	D	EA	UR
.01	13	7	5
.05	16	10	9
.10	18	14	13
Not-Significant (Region #)	11, 12	2, 3, 5, 7, 15, 18	6, 11, 13, 14 15, 17, 20

TABLE XI

VALUES OF EA COEFFICIENT BY REPUBLIC GROUPS

REPUBLIC*	REGIONS	RANGE OF VALUES	AVERAGE
Kosmet	5	-	-0.03
Serbia Proper	1, 2, 3, 4	0.02 - 0.18	0.11
Vojvodina	6, 7	0.15 - 0.27	0.21
Bosnia	14, 15, 16, 17, 18	0.22 - 0.50	0.30
Croatia	8, 9, 10, 11	0.19 - 0.47	0.31
Slovenia	12, 13	0.34 - 0.48	0.41
Montenegro	20	-	0.41
Macedonia	19	-	0.51

* Serbia is divided into Servia Proper, Vojvodina and Kosmet

DEMOGRAPHIC REGIONS OF YUGOSLAVIA*

* For names see Table X

SOURCE: Institut Drvštvenik Nauka Centar za Demografski Istraživanja, Šema Stalnih Rejona za Demografska Istraživanja, Belgrade, 1963.

FOOTNOTES

1. A good recent account of Yugoslav developments is found in Ian Hamilton, Yugoslavia: Patterns of Economic Activity, 1968.

2. By consumption opportunities Kuznets and Thomas mean such things as more "culture" in the cities or more sun in California, that is consumption possibilities that depend not on earning more or less but on being here or there.

3. Another work that considers effects of migration in detail is: Stanley Friedlander, Labor Migration and Economic Growth: A Case-Study of Puerto Rico, Cambridge: MIT Press, 1965, in which the author uses a modified Nelson Trap model to analyze the effects of emigration. The model of Harris and Todaro [7] also considers the effect of migration, in this case the effect on urban wage levels.

4. For a discussion of these problems see Greenwood [6] and Renshaw [16]. Another problem that had recently been given some attention is simultaneity, i.e., the fact that wages not only are a cause but also an effect of migration. The study of Gian Sahota [18] is the only one I am aware of that has looked at this empirically; Harris and Todaro [7] take this into account in a theoretical model.

5. Bruce Herrick, Urban Migration and Economic Development in Chile, Doctoral Dissertation, MIT, 1965.

6. Bruce Herrick [8] Ch. 3 gives a brief account of centralization in Latin America.

7. ibid. p. 46.

8. The distribution of Yugoslav city-sizes is intermediate between log-normal (the case for most developed nations) and primate (the case for most less-developed nations.) See Brian L. Berry "City-Size Distributions and Economic Development", Economic Development and Cultural Change, Vol IX, No. 4, July 1961, p. 573. The rank-size quotient for Yugoslavia is .94, which reflects a "balanced" distribution of city sizes.

9. Ivanka Ginić, "Demografski Izvori i Faktori Urbanizacije u S. R. Srbiji", Stanovništvo, 1966, IV, 2, p. 124.

10. See for example: B. Glušćević, "Regionalni Problemi Zaposlenosti i Produktivnosti Radne Snage", Ekonomska Misao, I, June 1968, pp. 249-258.

11. For a discussion of this in Yugoslavia see Blado Puljiz, "Mobilnost Stanovništva u Planinskim Područjima", Naše Teme, 1965, IX, 6, pp. 853-866.

12. This is talked about very often in the Yugoslav literature, and was even more important in an earlier period when the geographer-anthropologist-ethnologist Jovan Cvijić wrote about the traditional currents of migration in the Yugoslav territory. See for example M. Lutovac, "Migracioni Procesi Stanovništva Jugoslavije", Cvijićev Zbornik U Spomen 100-god. Njegovog Rodenja, Srpska Akademija Nauka i Umetnosti, Beograd, 1968, pp. 189-198; and Milica Sentić, "Značaj Cvijičevog Rada za Savremena Istraživanja Migracije", Stanovništvo, 1965, III, 4, pp. 241-246.

13. The Yugoslav Census classifies a settlement as village, mixed or urban according to a scale combining size and % non-agr., population thus:

	Pop.	% Non-Agr.		Pop.	% Non-Agr.
Village	0 - 300	0 - 70	Urban	1,000 - 2,000	90 +
	300 - 1,000	0 - 60		2,000 - 10,000	70 +
	1,000 - 3,000	0 - 40		10,000 - 15,000	50 +
	3,000 - 10,000	0 - 30		15,000 +	30 +
	10,000 - 15,000				

All in-between areas are classified as mixed. This scheme is described in the introduction to Book XII of the 1961 Census.

14. M. Sentić, op. cit., p. 243.

15. This conclusion is not disturbed by taking into account the organized colonization of Yugoslav peasants from the South into the Vojvodina lands left empty by the expulsion of the Volksdeutsch, a movement of about 250,000 people. See S. Stojković, "Naseljavanje Crnogoraca U A. P. Vojvodini", Istorijski Zapisi, 1961, XIV, 1, pp. 45-70.

16. The assumption used to derive hypothetical row values for Sand L in Table II would be of little use in the normalized matrix, as the indexes for S and L would be equal and the same as in the u row of Table III.

Proof:

$$sj = uj \cdot \frac{\text{pop. S}}{\text{pop. J}} = uj \cdot \frac{\text{\% pop. in S}}{\text{\% pop. in U}}$$

$$k_{sj} = \frac{sj}{\text{\% pop. in S}} = uj \cdot \frac{\text{\% pop. in S}}{\text{\% pop. in U}} \cdot \frac{1}{\text{\% pop. in U}} = k_{uj}.$$

17. This is computed from unpublished data on the registration of new comers to Belgrade which the author obtained at the city of Belgrade Office of Statistics in the fall of 1969, thanks to the kind efforts of Dr. Dušan Breznik, Director of the Center for Demographic Studies in Belgrade.

18. D. Breznik, Demografski i Ekonomski Aspekti Prostorne Pokretljivosti Stanovništva, Belgrade, Institute of Social Studies, 1968, p. 84.

19. See for example "Demographic Trends in Yugoslavia", Yugoslav Survey, Vol. XI, 2, May 1970, pp. 1-14.

20. See for example: M. Radovanovie, "O Nekim Pitanjama Etnološkog Proučavanja Dnevnih Migracija", Cvijičev Zbornik op. cit., pp. 207-215; Milan Bajić, "Dnevne Migracije Radne Snage U Vojvodini", Neke Karakteristike Geografskog Razvoja Vojvodine U Periodu 1945-1965, Sremski Karlovci, 1966, pp. 92-104, and the discussion in Jack Fisher [3].

21. The first figure is calculated from information on place of work and place of residence given in the 1961 Census of Yugoslavia, Book VI, Table 1.8 on p. 6; the second is found in Fisher [3], p. 74.

22. An excellent discussion of such costs with some empirical information found in Toma Krgović, "Problemi Putujučih Radnika", Bilten Društva Socijalnih Radnika SR Srbije, 1964, 9/10, pp. 10-19.

23. This may also be one of the facts behind the relative lack of Latin-American type shanty-towns in most Yugoslav cities although there does exist the practice of building "wild", that is on land outside the zoned areas encompassed by urban plans, as described in Dragoslav Antonijević, "Etnološka Strukturiranostx Stihijnih Naselja Današnje Imigracije Titovog Užica", Glasnik Etnografskog Instituta, XI - XV, 1962-66, pp. 77-96.

24. This issue has recently been clouded by the discussions concerning provision of modernization credits for private farmers and the possibility of letting republics determine the maximum allowable size of private farms, any likely change being in the direction of higher maxima. See The Globe and Mail, (Toronto), November 14, p. 9. The sociological, political and demographic aspects of this "problem" are dealt with at length in the writings of Petar Marković, e.g. Uticaj Migracija Poljoprivrednog Stanovništva Na Privremene Agrarne Strukture, Belgrade, 1966.

25. D. Breznik & G. Todorović, "Problemi Projekcija Stanovništva Velikih Gradskih Područja, Posebno Beograd", Stanovništvo, 1967, V. 2, pp. 95-102.

26. On this issue see Politika, 1969, December 6, p. 7; Dec. 9, p. 8; Dec. 12, p. 11.

27. Institut Društvenih Nauka, Šema Stalnih Rejona za Demografska Istraživanja, Belgrade, 1968.

28. Lutovac op. cit.

29. Dragomir Pantić, Etnička Distanca u SFRJ, Belfrade: Institut Društvenih Nauka, Centar za Istraživanja Javnog Mnjenja, 1967. This is an internal publication of the Institute, but the results are summarized in a number of articles by Mladen Singer in Vjesnik, 10, 16, 20th of December, 1967.

30. I refer the reader to an excellent book by Paul Shoup, Communism and Yugoslav National Question, New York: Columbia University Press, 1968.

31. Breznik, op. cit., The YP and LF data I used were taken from Table 14 of this study.

32. Pantic, op. cit.

33. Ibid.

34. One might note that this was not merely the tail of the move, that is this was not only a matter of filling up valley-lands left by migrants to towns but also much of the emptying was a result of Moslems who left for Turkey.

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